

**CLAIM:**

- 1           1.       A cutting tool comprising:
- 2               a body comprising sintered cemented carbide, cermet or ceramic; and
- 3               a hard and wear resistant coating on at least functional parts of the body, said
- 4       coating comprising a structure of one or more refractory layers of which at least one
- 5       layer comprises an alumina layer having a thickness of 0.5-25  $\mu\text{m}$ , and consisting
- 6       essentially of single phase  $\alpha$ -alumina textured in the [300]-direction with a texture
- 7       coefficient larger than 1.5, the texture coefficient being defined as:

$$TC(hkl) = \frac{I(hkl)}{I_o(hkl)} \left\{ \frac{1}{n} \sum \frac{I(hkl)}{I_o(hkl)} \right\}^{-1}$$

- 8       where
- 9           I(hkl) = measured intensity of the (hkl) reflection,
- 10          I<sub>o</sub>(hkl) = standard intensity of the ASTM standard,
- 11          powder pattern diffraction data, card number 43-1484,
- 12          n = number of reflections used in the calculation
- 13          (hkl) reflections used are: (012), (104), (110),
- 14          (113), (024), (116) and (300).

- 1           2.       The cutting tool according to claim 1, wherein the alumina layer has
- 2       a thickness of 1-10  $\mu\text{m}$ .

1           3.     The cutting tool according to claim 1, wherein the texture coefficient  
2     is larger than 3.

1           4.     The cutting tool according to claim 1, wherein the texture coefficient  
2     is larger than 5.

1           5.     The cutting tool according to claim 1, wherein the  $\alpha$ -alumina layer  
2     contains 0.01-10 percent by weight of residues of a texture modifying agent.

1           6.     The cutting tool according to claim 5, wherein the  $\alpha$ -alumina layer  
2     contains 0.01-5 percent by weight of residues of a texture modifying agent.

1           7.     The cutting tool according to claim 5, wherein the  $\alpha$ -alumina layer  
2     contains less than 1 percent by weight of residues of a texture modifying agent.

1           8.     The cutting tool according to claim 1, further comprising at least one  
2     layer having a thickness of 0.1-10  $\mu\text{m}$ , comprising a nitride, carbide, carbonitride,  
3     oxycarbide and/or oxycarbonitride of the metal titanium ( $\text{TiC}_x\text{N}_y\text{O}_z$ ) and that said  
4     layer is in contact with the  $\alpha$ -alumina layer.

1           9.     The cutting tool according to claim 8, wherein the at least one layer  
2     has a thickness of 0.5-5  $\mu\text{m}$ .

1           10.    The cutting tool according to claim 8, wherein the outer layer is  $\alpha$ -  
2    alumina.

1           11.    The cutting tool according to claim 1, wherein the outer layer is TiN.

1           12.    The cutting tool according to claim 1, the surface of the coated  
2    cutting tool is smoothened by means of a brushing operation.

1           13.    A method of producing a coated cutting tool comprising at least one  
2    layer of textured  $\alpha$ -alumina, the method comprising:  
3           introducing a tool surface to be coated into a reactive atmosphere comprising  
4    H<sub>2</sub> and/or Ar;  
5           providing the reactive atmosphere with a concentration of oxidizing species  
6    below 5 ppm;  
7           initiating nucleation of the  $\alpha$ -alumina layer on the surface by first introducing  
8    HCl and CO<sub>2</sub> gasses into the atmosphere, than introducing AlCl<sub>3</sub> gas into the  
9    atmosphere;  
10          maintaining a temperature of 950-1050°C during nucleation of the  $\alpha$ -alumina  
11    layer; and  
12          introducing a catalyst and a texture modifying agent into the atmosphere  
13    during growth of the  $\alpha$ -alumina layer.

1           14.    The method according to claim 13, wherein the oxidizing species  
2    comprises water vapor, the catalyst comprises  $H_2S$ , and the texture modifying agent  
3    comprises  $ZrCl_4$ .

1           15.    The method according to claim 13, wherein 0.05-10 percent by  
2    volume of the texture modifying agent is introduced.

1           16.    The method according to claim 13, wherein 0.2-5 percent by volume  
2    of the texture modifying agent is introduced.

1           17.    The method according to claim 13, wherein 0.5-2 percent by volume  
2    of the texture modifying agent is introduced.

1           18.    A method according to claim 14, wherein the addition of the texture  
2    modifying agent to the reaction gas mixture is 0.05-10 percent by volume of the  
3    total reaction gas mixture.

1           19.    The method according to claim 18, wherein the addition of the texture  
2    modifying agent is 0.2-5 percent by volume of the total reaction gas mixture.

1           20.    The method according to claim 18, wherein the addition of the texture  
2    modifying agent is 0.5-2 percent by volume of the total reaction gas mixture.